REVIEWS.

Art. X.—*Physical Exploration and Diagnosis of Diseases affecting the Respiratory Organs.* By Austin Flint, M. D., Professor of the Theory and Practice of Medicine in the University of Louisville, &c.

The time was when a medical man could, within the covers of a single volume, find almost all that was to be found of medical science; and he was, indeed, a happy man and a painstaking student who was able and willing to consult more than the one author, whose theories he had learned and whose disciple he had become. Within the memory, indeed, of not a few of our profession, a single treatise upon the theory and practice of physic was all that most practitioners ever cared to read. Experience was the one dependence of our profession, and years were supposed to bring wisdom. The man of largest experience was he who had seen the most cases, and he oftentimes resigned practice, only confirmed in the notions which he had erroneously acquired while *riding* with his instructor.

To-day we have the profession cut up into specialties. For every region we have treatises, and for every disease a monograph. There are many who doubt the expediency of so dividing our labours and our studies; who think a man a better physician for being a good surgeon, and a far better surgeon for being a good physician. This is, to a very great extent, true. But the truth does not so appear from anything inherent in the practice of physic or surgery, but because men who practice one branch are so apt to consider every other as secondary to their own. To act promptly and efficiently, a physician should neglect the reading of no part of medical science. He is not fit for a physician unless he understands physiology, nor for a surgeon unless he has a practical acquaintance with mechanical laws.

The same train of thought is applicable to the diagnosis of diseases of the chest. Men are still in successful practice who ridicule the idea of physical exploration; and it is to be feared, that many of our younger brethren pay such perfect deference to physical signs, that they allow rational signs of the utmost importance to escape them entirely.

Such men are not followers of the school to which the author of the treatise on Physical exploration and diagnosis of diseases affecting the respiratory organs, belongs. He has given us over six hundred pages upon this single subject. And they are six hundred pages of very readable and most instructive matter, in a clear and comprehensive style. We wished, on seeing the book, that it had been more condensed; but, after reading it through, we are unable to point out anything which should have been omitted. The book is founded upon facts, which have come under the author's own patient observation, and which have been judged by careful comparison with each other, and with the experience of other labourers in the same field with himself.

But, it may be asked, why write this book at all? Is not the literature of the chest already ample? Is not the field already crowded? The answer is very easily given; not so long as any careful and intelligent observer has any observations and opinions to communicate. And no one, in our opinion, can read Dr. Flint's treatise, without feeling satisfied that he has contributed to our medical literature a work of original observation of the highest merit.

We always read a preface, because we can learn from it whether a book is worth our study. We do not think it any vanity in a writer who finds that he disagrees with others, and tells us that he does not hesitate to follow a rule "which, in matters purely of observation, should not lead to the imputation either of egotism or presumption, viz., not to be more ready to distrust one's own accuracy than that of others." Dr. Flint tells us, in his preface, that "questions have so frequently arisen which are to be settled only by an appeal to the results of observation, that I have sometimes been tempted to lay aside the pen, and have resumed it only under the conviction that such questions must for a long period continue to arise; and that to wait for the means of meeting promptly every inquiry, is equivalent to an indefinite postponement."

The writer of this review is thankful that the author continued his work. With all the merit which belongs to the treatise of Professor Walshe, that book is very hard reading. The work of Skoda, which has come to us at a later day, we read without carrying off anything which gave us pleasure. The latter reminded us too forcibly of the painful studies of our collegiate course, which we were too glad to finish.

The work of Dr. Flint is eminently a readable one.

The introduction is devoted to the consideration of preliminary points pertaining to the anatomy and physiology of the respiratory apparatus. The modifications caused by sex and age, the differences of motion and of sound in different portions of the same side, and the *comparatively* similar, but not like parts of the two sides are fully examined. To the neglect of precaution in testing these differences, the examiner of moderate practice has occasionally condemned a patient to a fatal disease, whose recovery in other hands has caused him to lose confidence in the usefulness of physical exploration; or, more happily, has taught him to review his studies and correct his errors. To the one, experience is of no value; to the other, its value is inestimable. Some such experience probably induced Dr. Flint occasionally to amplify, "somewhat after the usual mode of oral teaching," and occasionally to repeat where otherwise he would have consulted brevity.

The words *bronchi*, *bronchia*, *bronchiæ*, are frequently used throughout the book. It seems to us that physicians are not sufficiently careful to adhere to the true words. The Latin *bronchus* and Greek βϱογχος have neither neuter nor feminine plurals. To be sure, gentlemen make the distinction of *bronchus* and *bronchia* between the primary and secondary divisions of the trachea, and we believe some medical dictionaries have done the same, but the distinction is arbitrary. If it were the universal custom to make such distinction, it might perhaps be allowable, but the same writer will frequently use the different words to express the same idea, and thus cause confusion. Primary, secondary, ultimate bronchi, would be a better and more accurate nomenclature. We may be accused of being hypercritical in relation to this matter, and certainly if we can find no greater fault with the book than this, it can hardly be deemed a very venal one.

Except in the original paper of Dr. Dalton, we have not before seen any notice of the experiments upon the respiratory movements of the glottis. These experiments, showing that "during normal respiration there is a constant and regular movement of the vocal chords, by which the size of the glottis is alternately enlarged and diminished, synchronous with the inspiratory and expiratory movements of the chest," will be of much service to us in the treatment of those spasmodic symptoms which we see so frequently in true and false croup. We may learn the propriety of putting young patients under the influence of narcotics or anæsthetics, sufficiently to enable us to destroy the irregular innervation by local or constitutional remedies.

The first part of Dr. Flint's book, to the three hundred and forty-sixth page, is taken up with the Physical Exploration of the Chest. This is the scientific part. It teaches how to examine the causes of the sounds we hear, the reasons why they differ, the methods of comparing them with each other, and indirectly the dangers of trusting too confidently to what has been written, without careful comparison of the examinations of others with our own observations.

Percussion and auscultation are the means mostly made use of, to discover what are called the physical signs. There are other means of less value in most cases of respiratory disease, but occasionally the practice of inspection, palpation, mensuration, and even succussion, will give us aid in the greatest degree. It is not necessary that we should all understand the science of acoustics; and should we at the outset consider such knowledge essential, we should find but few of our profession capable of conducting the simplest examination. There are certain principles of acoustics, however, which every man of moderate abilities may learn, which no physician of our day should be ignorant of, though he may not even know the meaning of the word. To the same extent a mechanic may be able to build his wall, who knows nothing of the gravity which keeps his plumb-line perpendicular.

"It is a common impression with those ignorant of the subject, that the signs generally represent uniform and definite morbid conditions; in other words, that each sign possesses its own special significance; and therefore, for the practice of physical exploration, that it is simply necessary to be able to recognize and appreciate certain abnormal sounds. According to this view, physical exploration is merely a mechanical art. This is implied when *symptoms,* as distinguished from *signs,* are called *rational.* The inference is, that to determine the value of signs, processes of reasoning are not required: that they express in themselves their full import, and that the ability to discriminate different diseases thereby depends mainly on manual tact and the cultivation of the senses. The student should, as soon as possible, dispossess the mind of this error. Few signs, individually, are pathognomonic. Their diagnostic signification depends on their combination with other signs, and on their connection with symptoms. Hence, something more than delicacy of hearing and skilful manipulation is requisite. Thought and the exercise of judgment are needed, not less than in determining the nature and seat of diseases by their *vital* phenomena. In short, physical exploration develops a series of facts which are to be made the subjects of ratiocination in their applications to diagnosis, as much as facts obtained by other methods.

"To be convinced of the great benefit which practical medicine has derived from the introduction of physical methods of exploration, it is only necessary to contrast the facility of discriminating the most common pulmonary affections at the present time, with the difficulty which confessedly existed prior to the employment of these methods. If the reader will turn to the works of Cullen, or the more recent writings of Good, he will find that these authors acknowledge the inability of the practitioner often to distinguish, by means of symptoms, pneumonitis, pleuritis, and bronchitis from each other, so that for practical purposes it was deemed sufficient to consider these three affections as one disease. At the present time, with the aid of signs, it is very rarely the case that the discrimination cannot be made easily. And that this improvement is mainly due to physical exploration, is shown by the fact, that to distinguish these affections by means of symptoms alone, is still nearly as difficult as heretofore. But to realize the importance of the subject it is not necessary to institute a comparison of the present with the past. It is sufficient to refer to the mistakes in diagnosis daily made by practitioners who rely exclusively on symptoms, which might be easily avoided by resorting to physical signs. It may not be amiss to cite some illustrations from instances that have fallen under my own observation. Examples of confounding the three affections just named are sufficiently common. Of these affections, pneumonitis and pleuritis are not unfrequently latent, so far as distinctive vital phenomena are concerned, and consequently are overlooked. Chronic pleurisy is habitually mistaken for other affections by those who do not employ physical exploration. Of a considerable number of cases, the histories of which I have collected, in a large proportion the nature and seat of the disease had not been ascertained.[1] Yet nothing is more simple than to determine the existence of this affection by an exploration of the chest. Acute pleuritis and pneumonitis are sometimes completely masked by the symptoms of other associated affections, and thus escape detection. This is observed in fevers, and when head symptoms become developed, especially in children. Under these circumstances, the practitioner who avails himself of physical signs is alone able to arrive at a positive conclusion as to their existence. Emphysema is an affection which cannot be recognized by symptoms alone, and hence, they who neglect signs have no practical knowledge of it. Acute tuberculosis I have known repeatedly to be called typhoid fever; on the other hand, I could adduce numerous examples of different affections erroneously considered to be phthisis, and a still greater number of instances in which patients with this affection were incorrectly supposed to be affected with some other disease than tuberculosis. Were we to dwell upon these, and other mistakes which might be added, it would be easy to show that they are unfortunate, not merely in a scientific point of view, but with reference to practical consequences involving the welfare, and it may be the lives of patients." Pp. 66–68.

Physical signs and symptoms have each their value. Taken together, they tell us all that can be of avail in treatment. Separate them, and we are in constant danger of making mistakes. Who does not recall cases of hæmoptysis, which would once have divided a man from his family, perplexed him in his business, condemned him to expensive travel, and a regimen which, if it did not kill him, would have rendered his very existence a burthen? The use of physical signs enables us to tell him that he has no disease incompatible with a long and useful life, and teaches us to look elsewhere for a cause that may be removed. But these signs alone are of little value. They must be detected repeatedly in the same case, but they must be compared with the rational.

"By thus directing attention," says Dr. Flint, "to some of the points of contrast between symptoms and signs, it is not to be concluded that these two classes of phenomena hold conflicting relations in the practice of medicine. Neither is to be employed in diagnosis to the exclusion of the other. They are not to be disconnected save for abstract consideration. They are always to be brought to bear conjointly in clinical investigations; combined, they lead to conclusions which neither may be competent to establish alone. They mutually serve to correct or confirm deductions drawn from either separately. It is never to be lost sight of in the study or practice of physical exploration, that to devote too exclusive attention to signs, is as much a fault as to ignore their value, and rely entirely on symptoms." P. 69.

We have often wondered that so little attention has been paid to this comparison even by physicians in city practice. It is their fault, not their misfortune, which prevents their acquiring a reasonable knowledge of physical exploration. Some men learn very easily to detect differences in sounds, and some require untiring labour; but with a single patient a practitioner can learn, if he is willing to use the means nature has given him. One of the greatest merits of Dr. Flint's treatise is, that it teaches us as much about healthy as diseased signs. Writers have generally been satisfied to say, that in one part of the chest we shall find vesicular respiration and resonance, in another blowing respiration and resonance; again dulness, and here tympany. But a large part of this book tells us, what students do not always know how to find and where to find certain sounds in health as well as in disease. One who never examines a chest, unless he suspects disease there, throws away the most essential means of discovering disease. In the hospital, almost every student listens for bronchial respiration and friction sound in pneumonic and pleuritic patients; but a few take every opportunity to listen at those chests, where they know that there is no other sound than that of healthy respiration. It is needless to say which become the most correct auscultators. He who studiously reads Dr. Flint's book, and examines the healthy chest will, at all events, learn that most important part of our professional knowledge, when *not* to treat a patient.

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[1] Vide Clinical Report on Chronic Pleurisy, by the author.

Before entering upon the study of abnormal sounds, it is desirable that one should be familiar with percussion in health. After guarding against the effect of irregular posture, and making allowance for the sounds produced by bodies against which the subject leans or reclines, the examiner is to bear in mind the fact, that the sounds elicited in the particular case are to be compared immediately with each other, secondarily with the sounds obtained in other cases. His own position must be such that, in passing from one point to another, upon the two sides, his relative position to the patient should be the same. This is of more importance than we are at first inclined to think. But no one can fail to be convinced of this who will invite a friend to percuss for him, while he is content to be an auditor only. Indeed, we are a little surprised that this course is not more frequently pursued; and we should have considered it another excellence in Dr. Flint had he laid stress upon it. We never should have been able, in any great degree, to appreciate Skoda's remarks upon the tympanitic sound of dull chests, if we had not listened to the exercise of a friend upon one of our own patients.

There were twenty subjects selected, apparently free from disease, whose chests were symmetrical in conformation. In only eight was the percussion sound, over the infra-clavicular regions, equal on the two sides in all respects. In ten there was greater resonance on one side. In all these the resonance was greatest on the left. In one of these it was greatest over a certain portion of the right side. In eleven, the pitch of resonance was higher on the right side. In four instances, the vesicular quality of the resonance was greater on the left side; never on the right. After showing other disparities in these apparently healthy cases, Dr. Flint says :—

> "Theoretically, in view of the greater capacity of the right chest, it would seem perhaps more reasonable that the difference between the two sides should be the reverse of that which is found to exist. The larger development of the right pectoral muscle, in consequence of the greater use of the right upper extremity, may account for the fact in some instances, but the disparity exists in cases in which there is no apparent difference in the muscular covering, in this situation. Possibly the different physical conditions at the base of the thorax may afford an explanation. On the right side the lungs repose, with the diaphragm intervening, on the liver, which occupies the whole of the base on that side. The presence of this solid viscus may slightly deaden the sound. On the left side below the lung is situated the stomach, frequently more or less distended with gas, and the effects of this, it may be supposed, is to increase the sonorousness on that side, even at the summit, independent of the transmission of the tympanitic gastric sound which is sometimes observed." P. 82.

The explanations are deserving of consideration. The author might have asserted his supposition without much danger of its being controverted.

Over the scapular regions, in the same twenty patients, there was less disparity. In thirteen no difference was detected. In the remaining seven there was difference in pitch, intensity, &c. The scapular regions are less attractive to percussors, on account of the difficulty which many have of producing sounds, where the muscles are so thick. The ground has been taken that this region is of little value in physical exploration by percussion; but Dr. Flint truly says that, "like the infra-clavicular, it is an important region with reference to the physical signs of phthisis." With an assistant to percuss, it is remarkable how much light may be obtained even over this region of bone and flesh. Late in disease, there may be no necessity for noticing the sounds here; but it may be that the first confirmatory sign of chronic disease will be found here. The same remarks will apply to the mammary region in the female.

When the student has gained expertness in the study of healthy chests, he is fitted for the study of percussion in disease; and by this time he has acquired so large a part of the desired knowledge, that percussion in disease will have but few difficulties to contend with.

Percussion in disease gives us not merely a new set of sounds, but we recognize those previously heard, but often in new situations. The abnormal sounds are divided into I. *Exaggerated vesicular resonance;* II. *Diminished vesicular resonance;* III. *Absence of Resonance;* IV. *Tympanitic resonance.* Under these four heads, with as much clearness as can be expected, are included all the sounds we have been accustomed to call by the terms clear, dull, flat, amphoric, tubular, &c.

The importance of understanding the indications of percussion sounds, is illustrated, on page 105, by the supposed instances of pneumonitis and tubercle.

Tympanitic resonance under peculiar circumstances is the percussion sound, to which our attention has been more than usually attracted of late. It must be remembered that there is a tympanitic dulness as well as a tympanitic clearness; just as there is a tympanitic sound from tapping on a tenor drum, or by pounding on an eighteen inch wall. The examination of a pleuritic or pneumonitic patient often ends with detecting a level for the fluid, or the limit of probable hepatization. Many are still not aware, that the master's hand can bring sounds from many a dull spot, and these will find in Dr. Flint's book a description of tympanitic dulness.

Tympanitic resonance may mislead the careless. Without particular attention to the facts, it is said that mistakes may be and have been made; that the diseased side has been taken for the healthy one and *vice versâ,* because a morbid resonance was used as a standard of health.

> "The rationale of the foregoing interesting and important facts is a matter at present *sub judice,* and inasmuch as I have no fruits of personal experiments or researches to offer, I shall not engage in a lengthened discussion of the subject. To account for an exaggerated tympanitic resonance under circumstances in which it is clinically exceptional, and apparently opposed to the laws of physics, viz., when the lung is compressed by the presence of liquid, or rendered more dense than natural by solidification, the doctrine has been advanced by Skoda that "if the lung contains less than its normal quantity of air, it yields a sound which approaches to the tympanitic, or is distinctly tympanitic."[1] He bases this doctrine on experiments made upon the pulmonary

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[1] Markham's translation, Am. edition, page 47.

organs in the dead subject, and also removed from the body, taken in connection with the facts pertaining to disease which have been presented. Clinically this doctrine cannot be considered to hold good in the light of a general law, for abnormal sonorousness in cases in which the lungs are to a greater or less extent deprived of their normal quantity of air, in other words rendered more dense by disease, is by no means an invariable sign, but, on the contrary, occurs only as an exception to the general rule. The sign, therefore, cannot be due simply to the mere deprivation of air, or any constant condition, but to some contingent circumstances. The question, then, is, what are these contingent circumstances? In cases of effusion within the pleura, the natural effect is to condense the lung by compression of the liquid; but it is not certain that in all instances the proportion of air to the solid tissues above the level of the fluid is diminished. By the force of the inspiratory movements causing greater dilatation of the cells, the ratio of air may perhaps even exceed the limits of health. It is not improbable that the origin of the emphysema and dilatation of the bronchiæ which sometimes succeed pleurisy may have a date anterior to the absorption of the effused liquid. These are points which claim investigation." P. 117.

We believe it to be much more easy to acquire facility in reading auscultatory than percussion sounds. The one requires a correct ear only; the other, to be of value in doubtful cases, requires a musical ear and a nicety of touch which a large number of our profession never obtain. This seems to be the opinion of Dr. Flint. The several methods of auscultating respiratory sounds are fully described by him. Like the generality of examiners he concludes, that neither mediate nor immediate auscultation should be cultivated or practised to the exclusion of the other. Our own opinion is, that the immediate application of the ear to the chest is to be preferred by practitioners generally. Those who make the treatment of respiratory diseases a specialty, acquire by practice an ability to vary their course, and their instruments, which others never can. The ability to hold a stethoscope, so as not to make a noise with one or the other end of it, is an elegant accomplishment. Cammann's flexible stethoscope with double tubes, is recommended by Dr. Flint, in cases where a delicate examination is necessary. But we are inclined to the opinion, that, unless constantly used, it will fail to be of any service except to specialists, and to those whose sense of hearing is impaired. The author states, that in using the instrument "it is to be borne in mind, that it conducts sounds produced exterior to the chest, in no less a degree than those emanating from within." It is by no means certain, that even muscular sounds, within the body of the examiner or of the patient, might be metamorphosed into respiratory sounds.

The rules for auscultating are well laid down, and it is advised to accustom one's self to the use of either ear, if the hearing be equally acute in both, that change of position on the part of the explorer may not be necessary.

As percussion sounds in health are described at length, so are the auscultatory sounds. The sections devoted to auscultation in health, we consider the most valuable portion of the book. So important is this part of our study, that we should take frequent occasions for examining those whom we believe to be in normal condition. "Incongruous as it may at first appear, it will be found to be true, that certain of the most valuable of the physical signs involved in diagnosis, may be studied in persons entirely free from disease."

The examinations of forty-four healthy persons furnished the material for analysis. Like percussion sounds, auscultatory sounds are only valuable when properly compared. Any one by itself means nothing, or it may mean anything. Subjects must be compared with each other, and the two sides in each subject. Due allowance must be made for the size, age, sex, fulness of flesh, temperament, &c., and in disease, even the time of day must be noted; else we may find dulness and absence of respiration or coarse rales, where, at another hour, another physician would positively and truly assert, that there was abnormally increased resonance and tubular respiration.

The two sides are different in formation. One lung has three lobes, the other two. One has the liver below it, the other the stomach. The heart occupies more of the left chest than of the right. These differences were not in the course of our early studies so forcibly placed before us as of late, and still less were the variations in sounds. We have not space enough to review, even slightly, all that is said of the different sounds heard in the healthy chest. The following extracts from the sections upon VESICULAR RESPIRATION, will sufficiently illustrate Dr. Flint's method of making his analysis, as well as the style of the book.

> "1. *Inspiratory Sound.*—In sixteen of twenty-four cases, more or less difference as respects *intensity* between the two sides was appreciable. In all but one of these sixteen instances the inspiratory sound was more intense on the left side. This result is in direct opposition to the statements of some authors;[1] but the matter is purely one of observation, and as the comparisons were made with care, and with no expectation of arriving at such a result, I am bound to assume its correctness. I can only account for the opinion of observers that the inspiratory sound on the right side is frequently more intense than that of the left, by supposing that elevation of pitch has been mistaken for increased intensity. The disparity in intensity was in some instances very marked. An inspiratory murmur was occasionally tolerably developed on the left side, and scarcely audible on the right. A striking difference was also in some cases observed in the effect of forced respiration on the intensity of the inspiratory sound, the intensity on the left side being proportionately increased, without any augmentation on the right side.
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> "In the relative amount of vesicular quality a difference was appreciable in a large proportion of the cases. And in all the instances in which a disparity in this particular existed, the greater amount of vesicular quality was on the left side. This was true in fourteen of twenty-four examinations of different individuals. The disparity in some instances was slight, but in several strongly marked; in not one instance was the vesicular quality greater on the right side.
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> "Compared as respects the pitch of the inspiratory sounds, a difference was apparent in a large majority of the observations. Excluding a few cases in which attention was not directed to this point, of nineteen examinations, the pitch was higher on the right side in twelve, and no disparity was appreciable in seven; in not a single instance was the pitch higher on the left side. The difference here as with respect to the preceding characters, was in some instances striking, and in other instances slight. This numerical result does not vary much from that obtained by an analysis of the series of previous examinations. The latter numbered fifteen, and of these fifteen examinations the inspiratory murmur was higher in pitch on the right side in eleven, and no disparity was observed in the remaining four.
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> "So far as the data just presented, then, furnish ground for deductions, a disparity between the inspiratory sounds at the summit of the chest in front, exists in a large proportion of individuals free from all symptoms of thoracic disease, this disparity pertaining to the intensity, vesicular quality, and pitch. Variations in these three characters obey certain rules, viz., the greater relative intensity is almost uniformly on the left side. The same rule holds good with respect to a greater relative amount of the vesicular quality. On the other hand the greater elevation of pitch is always on the right side.[2]

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[1] Gerhard, Barth, and Roger.

[2] The relative duration of the inspiratory sound on the two sides is another point of comparison, to which attention was not directed in making the examinations.

"2. *Expiratory Sound.*—Facts relative to the *intensity* of the expiratory sound on the two sides are contained in the notes of nine examinations. Of these nine comparisons, in three instances an expiratory sound was appreciable on the right side, and none on the left side; in two the development on the right side was greater than on the left, and in three the intensity seemed equal on the two sides.

"In several instances the expiratory sound on the right side was prolonged, sometimes being nearly or even quite as long as the inspiratory; on the contrary, the expiratory sound, when present on the left side, was always short, never exceeding one-third of the duration of the inspiratory. It is noted in several instances that the expiratory sounds on the right side seemed distant from the ear.

"In several instances, on the right side, a brief interval separated the sounds of inspiration and expiration. In every instance, on the other hand, on the left side, the two sounds were continuous.

"The pitch of the expiratory sound was higher than that of the inspiratory on the right side in eleven instances, and on the left side in a single instance. It was lower on the left side in six, and on both sides in four instances.

"According to the foregoing results, an expiratory sound exists on the right side in a certain proportion of cases in which none is appreciable on the left side. It is frequently prolonged on the right side, appears distant, and is separated from the inspiratory sound by an interval, and is higher in pitch.

"The facts presented in the foregoing comparative account of the summit of the chest in front, may be seen at a glance by reference to the subjoined table.

" *Comparison of Right and Left Infra-clavicular Regions. Whole number of examinations twenty-four.*

INSPIRATORY SOUND.

Right.	*Left.*
Greater intensity in 1 case.	Greater intensity in 15 cases.
Vesicular quality more marked in no case.	Vesicular quality more marked in 14 cases.
Higher pitch of sound in 12 of 19 examinations.	Higher pitch of sound in no case.

EXPIRATORY SOUND.

Right.	*Left.*
Present on this side, and not on left side, in 3 cases.	Present on this side, and not on right side, in no case.
More intense on this side in 2 cases.	More intense on this side in no case.
Prolonged in several cases.	Prolonged in none.
An interval between the sounds of inspiration and expiration in several cases.	The two sounds continuous.
Pitch higher than that of the inspiratory sound in 11 instances.	Pitch higher in 1 instance.
Pitch lower than that of inspiration in 4 instances.	Pitch lower in 10 instances.

"Reviewing the facts pertaining to both the inspiratory and the expiratory sound, it is perceived that the several elements which have been seen to compose the bronchial respiration are manifested at the summit of the chest, in front, on the right side. This is a practical conclusion arrived at by means of the foregoing analysis. Assuming this conclusion to be correct, its importance will be apparent hereafter, in connection with the diagnosis of tuberculosis of the lungs in the early stage. In that connection, without knowledge of the facts which have been presented, it can hardly be otherwise than that error of diagnosis will be committed, by mistaking for the physical signs of disease, the several characters of the bronchial respiration which may exist at the summit of the right chest, not proceeding from a morbid condition. I am free to state that my own experience would supply illustrations of error from this source." Pp. 153–155.

In like manner are the sounds of the healthy chest followed through the different regions.

Auscultation in disease is for the purpose of determining morbid sounds and their differences from healthy sounds; to ascertain the connection between these and their causes, and to explain the morbid physical conditions. Explanation of the mechanism of these sounds is not necessary. However much we may differ as to the manner of production of a particular morbid sound; in our treatment of the case, as based upon its particular cause, we should not differ. The explanation Dr. Flint has, therefore, wisely omitted from his book, as tending only to provoke useless discussion, which would lead to differing conclusions.

Auscultation in disease furnishes modified and adventitious respiratory sounds; exaggerated, diminished, and suppressed vocal resonance; modified cough; abnormal transmission of the heart sounds. When we say that one hundred and twenty pages are usefully occupied with these subjects, every one will understand, that the limits of this paper will not permit even a brief recapitulation which would do justice to the author.

We shall, therefore, give a sketch of Dr. Flint's remarks upon a few of the more common and best known of the diseases of the respiratory organs. From these the readers of the Journal will be enabled at once to decide whether the work of the author has been properly done.

As far as the three hundred and fiftieth page there is very little mention of, no dissertation upon, any distinct affection of the chest. Thus far, it is a work complete in itself. If the latter part of the book had not been published, the profession would still have a work of great value, and one which must hereafter be looked upon as a standard in auscultation. Had the first part been published a year in advance of the second, we think it would have met with a ready sale, would have found more readers, and created a demand for the second.

This is aside from our work, however. We are informed, in the preliminary remarks, that we are not to make our diagnosis at the bedside by signs alone. There are physiological laws and symptoms which must guide us in our studies. Symptoms and signs must be balanced and compared. In pointing out the diagnosis of particular diseases, Dr. Flint bears this rule constantly in mind.

No disease comes under our observation in which an early diagnosis is more necessary than pulmonary tuberculosis. From a careful examination of one hundred cases of this disease, Dr. Flint has drawn his conclusions. The examinations of healthy chests are carefully considered in this connection. It is to be remembered, that there is a difference in the percussion and auscultatory sounds in the two sides of healthy well-formed chests. Distinct dulness in the left infra-clavicular region is of great significance; on the right side, that same dulness is to be considered, but, as a morbid sign, taken with great reserve. There is a difficulty in percussing the post-clavicular regions, which most auscultators never entirely overcome. A disparity in this region is, therefore, to be distrusted when it is slight. Dr. Flint has noticed it, however, when it was not appreciable in the clavicular and infra-clavicular regions. Percussion over the scapula has been considered of secondary importance. He attributes great value to it, because, from percussion in health, it is found that a natural disparity in the two sides behind is much less frequent than in front. It is necessary to percuss at different hours in the day; because, when a cavity has formed, percussion early in the day will detect dulness, where, after an abundant expectoration, there will be a change to clearness of resonance. The auscultator is warned against deep percussion in cases of hæmoptysis, because profuse hemorrhage has followed it so closely as plainly to show that accident to be a direct consequence of the violence used.

There is no auscultatory sound which we may not find in phthisis. An attention to auscultation in health is, therefore, demanded. The presence or absence of prolonged expiration, we know, is often considered a sufficient evidence of the presence or absence of tubercle. We are taught that either inspiration or expiration may be absent to the ear. Occasionally, except with Cammann's stethoscope, the inspiration is inaudible; sometimes that alone is to be heard. There are other abnormal modifications which must then enter into the calculation. As the expiratory sound is *sometimes* wanting, so in others it is the only sound to be heard. Considering the signs discovered in health, it must be borne in mind that the character of the broncho-vesicular sound should be strongly marked at the summit of the right side, for it to be considered, in itself, an evidence of disease. On the other hand, if situated at the summit of the left side, it is much more significant of disease.

> "Moist crackling or mucous rales may, however, be produced by the escape of softened tuberculous matter into the tubes without necessarily involving the coexistence of circumscribed bronchitis. The development of moist or bubbling sounds is generally regarded as a circumstance distinctive of the fact that softening has taken place. Undue significance, as it seems to me, has been attached to this circumstance. It is impossible to determine from the characters of the sounds whether they proceed from the presence of softened tuberculous matter, or from mucous secretions, or (as must be the case frequently) from both combined. And inasmuch as circumscribed bronchitis may undoubtedly exist before softening of the tuberculous matter ensues, mucous rales are heard before the disease has advanced to this stage. Not indicating necessarily softening, moist rales limited to the summit of the chest are highly diagnostic of tuberculosis, and in cases of doubt it is useful to auscultate repeatedly, and especially in the morning before expectoration has taken place, in order to discover them, if they exist." P. 474.

The diagnosis must, to a considerable extent, be made out from the previous history. It is based on positive evidence. But its differential diagnosis requires more than we are enabled to discover by auscultation alone.

> "A cough, not originating from a distinct attack of acute bronchitis, and not preceded by coryza, but frequently commencing so imperceptibly that the date of its first appearance cannot be definitely ascertained: in degree slight, moderate, or violent, but persisting for some time with little or no expectoration. Dryness of the cough, continuing for a greater or less period, according to my experience, obtains in a larger ratio of cases than is estimated by Walshe, viz., one-tenth. I should say that careful inquiry of patients will show it to be the rule. An expectoration at first small, transparent, and frothy; becoming gradually more abundant, solid, opaque, yellow, and non-aerated, subsequently consisting of sputa streaked with yellow lines, particoloured, and frequently presenting irregular ragged edges; occasionally including small particles resembling boiled rice, and a grumous-looking substance contained in a thinner fluid, like the deposit in barley water. According to Walshe, from whom is borrowed the description of the appearance last named, such a deposit occurs only in cases of phthisis. At a more advanced period purulent matter, in greater or less abundance, running together and forming an ash-coloured mass, with a nauseous and occasionally fetid odor. Small fibres, supposed to be exfoliated elastic tissue, discovered by microscopical examination: also detached fragments of other of the anatomical elements of the pulmonary structure, and possibly, in some instances, the tubercular corpuscle. Acute stitch-pains at the summit of the chest, sometimes in front, oftener beneath the scapula; recurring from time to time; at times severe, and lasting for several days; in other instances slight

and of brief duration; experienced more frequently on one side than on the other, but often occurring successively, or in alternation, on both sides. These pains generally denote repeated attacks of circumscribed pleuritis. Chills, or shiverings, sometimes observing an approach to periodicity, and liable to be attributed to an irregular or imperfectly developed intermittent. Hæmoptysis,[1] frequently the first symptom to create alarm in the mind of the patient; sometimes preceding other symptoms, and all appreciable physical signs."[2] P. 489.

We are told, with much truth, we believe, that dyspepsia is not a frequent cause of phthisis, and the same is said to be true of chronic pleurisy and pneumonitis.

Acute phthisis is treated of in a few pages. More might have been said upon this subject with benefit, for we have reason to think that physicians have been, sometimes, unjustly blamed for not diagnosticating this affection in some short cases, where it was easily detected by other physicians a very few weeks or days subsequently.

The diagnosis of pneumonitis and pleurisy are sufficiently easy to be made. Yet how frequently do we have cases come under our care where the previous diagnoses have been inaccurate. How frequently is it the case, that we are doubtful whether the young patient has a pneumonitis or an encephalitis? How frequently do we say that this patient has lung fever, while we cannot help a feeling of mixed doubt and certainty, whether it may not turn out to be a functional derangement after all. When fresh from the school, we feel vastly more competent to diagnosticate disease than we are found to be ten years later. This is in part owing to the fact, that each new class of graduates has a partially new and more perfect system of diagnosis. It is in part due, also, to our having been oftentimes deceived and having learned caution. In the work before us, we believe that the signs of these two diseases are well laid down.

"If a person be seized with a chill, which is followed by high febrile movement, and lancinating pain in the chest, referred to the neighbourhood of the nipple; accompanied by cough, with an adhesive, rusty expectoration, and a well-marked crepitant rale is found on auscultating the posterior surface of the chest on one side, it is at once evident that he is attacked with pneumonitis seated in an inferior lobe." P. 421.

No one can doubt the truth of this description, particularly when it is added that "a viscid expectoration, containing a variable quantity of blood in intimate combination, is a symptom belonging exclusively to inflammation of the pulmonary parenchyma."

But we are told that the crepitant rale may be obscure; "the characteristic expectoration is by no means uniformly present in cases of pneumonitis, and, if not altogether absent, it is not always among the earlier symptoms of the disease;" there may not be an excess of pain which can be fixed in any one part of the chest. These cases are not common, but they do sometimes occur; and it so happens that the writer of this article, by that strange coincidence which every practitioner will notice as having happened with some particular diseases, has seen this want of *signs* in a large number of his cases of pneumonitis within the few years past. It is almost unnecessary to say, that there is something peculiar which prevents a practitioner from diagnosticating anything but pneumonitis in such cases. He of course gives a guarded diagnosis to the family. At length perfect dulness, unchanged by change of position, and bronchial respiration and voice, mixed with crepitus in some near spot, enables him to say that his mind is fully made up.

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[1] The subject of hæmoptysis in its relation to tuberculosis, has been elaborately investigated by Dr. Walshe; *vide* British and Foreign Medico-Chir. Review, January, 1849.

[2] In 91 of the 100 cases which I have analyzed, as respects physical signs, the histories contain information concerning hæmoptysis. It had occurred in 53 cases prior to the time of my examinations. Of 22 cases of small tubercular deposits, it had occurred in 13. Of 11 cases in which the existence of cavities was ascertained, it had occurred in 6. Of 58 cases of abundant deposit, it had occurred in 34.

We wish that more had been said concerning these latent cases of pneumonitis.

The *crepitant rale* is the earliest and most characteristic of the positive signs, and Dr. Flint correctly differs from Skoda, we think, in saying, that it is present in a very large majority of the cases of pneumonitis.

> "It is probable that examinations repeated, and made at an earlier period, would not have been negative as regards this sign in the greater proportion of the few instances in which it was not discovered. Of 149 examinations, in forty-five cases, made at different periods in the progress of the disease, the presence of the rale is noticed in eighty-five, and its absence in sixty-four. The collection of cases analyzed did not embrace cases of lobar pneumonitis occurring in infancy. My observations led me to concur with others in the opinion that the crepitant rale is much less constantly present in children than in adults. It is perhaps oftener absent than present in infant life. The constancy of the rale in acute primitive pneumonia, affecting the adult, is shown by the much more extensive researches of Grisolle." P. 409.

We should be glad to extend our notice of this book, for we have not alluded to a large part of it. The chapters on bronchitis and pleuritis will bear much study, and from them the physician in large practice will find much that is valuable, much that he will recognize as true, but which he has not read. To do the book justice, to point out what is new, or stated in a new form, would require us to quote the whole book.

In closing, we recommend the treatise to every one who wishes to become a correct auscultator. Based to a very large extent upon cases numerically examined, it carries the evidences of careful study and discrimination upon every page. It does credit to the author, and, through him, to the profession in this country. It is, what we cannot call every book upon auscultation, a readable book. C. E. B.

ART. XI.—*Statistics and Treatment of Typhus and Typhoid Fever, from Twelve Years' Experience gained at the Seraphim Hospital, in Stockholm* (1840—1852). By MAGNUS HUSS, M. D., Professor in the Medical Clinic at the Caroline Institute; Member of the Royal Academy of Science at Stockholm; Laureate of the Institute of France, etc., etc. Translated from the Swedish original by ERNST ABERG, M. D. London: Longman, Brown, Green and Longmans. 1855. 8vo., pp. 200.

THE publication of the great work of Louis on the "Typoid Affection," aside from its influence on clinical investigations in general, and the intrinsic value of its facts and results, was an important event as a point of departure for entering anew on the study of continued fever in different countries. Analyzing the phenomena faithfully recorded at the bedside, together with the morbid appearances noted in the dead-room, Louis established the individuality of a disease which previously had not only been designated by dif-